# Hy-tex SWIMMING POOLS

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# DETAILS AND NOTES

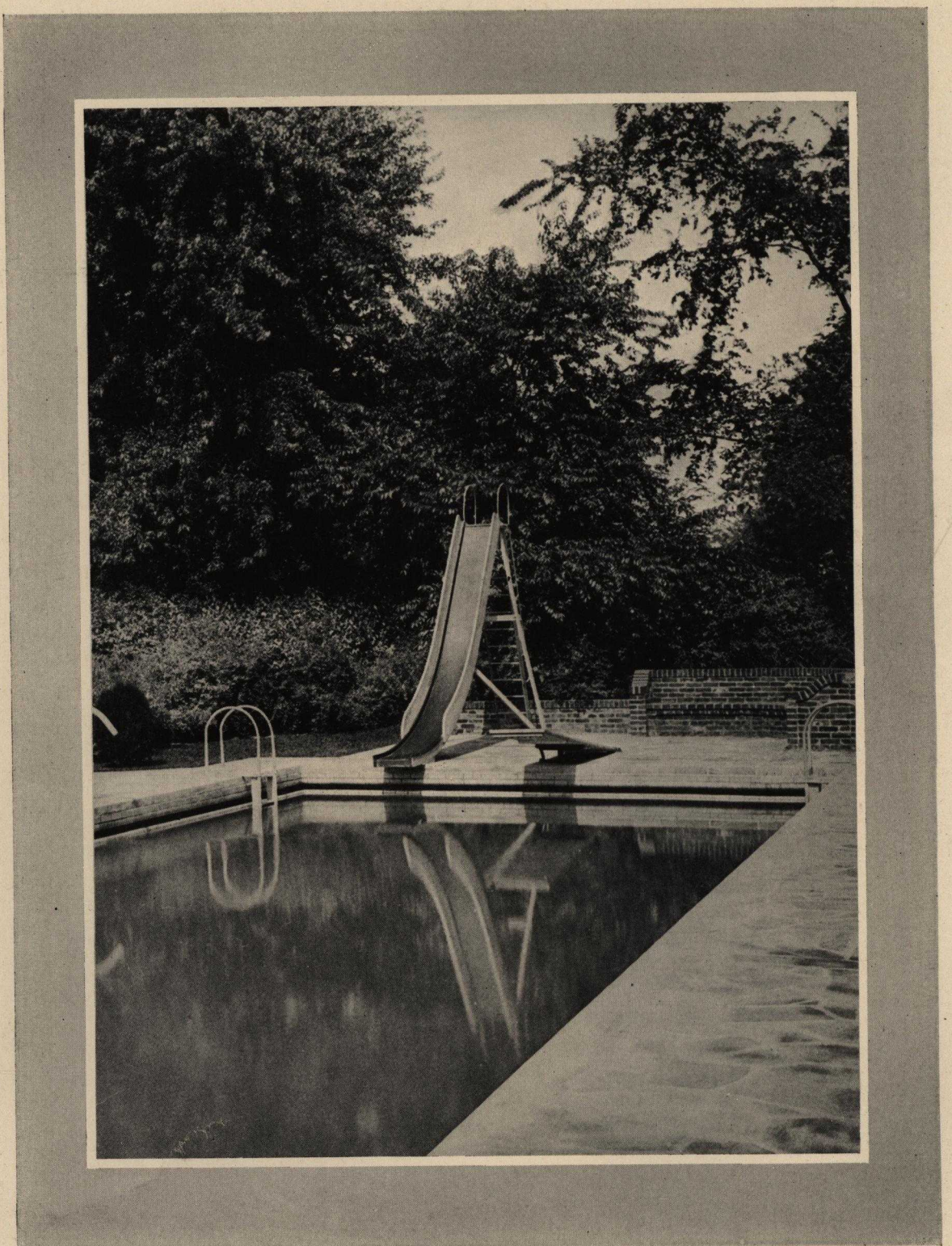
ON

# CONSTRUCTION

OF

# Hy-tex STANDARD SWIMMING POOL

HYDRAULIC-PRESS BRICK COMPANY
CENTRAL NATIONAL BANK BLDG. ST. LOUIS, MISSOURI



# HY-TEX ENAMEL BRICK

## FOR SWIMMING POOLS

WITH the increasing demand for swimming pools for clubs, universities, high schools, institutions, playgrounds and amusement parks, and a recognition of the value of a pool as a public or private memorial, the material to be used in their construction is a question of the greatest importance. It must not only combine simplicity of construction with economy of first cost and future upkeep, but it must afford maximum efficiency in resisting contamination, and should be beautiful in appearance.

Hy-tex Enamel Brick are ideal for this purpose. With their tempered surface secured by the double burn and hard, smooth and durable in texture, they are proof against crazing, peeling, and discoloration, and admit of perfect cleansing with a minimum of labor, thus securing the sanitation so essential to the health of the public.

While it is recommended that the walls and bottom of the pool be kept a glistening white, color decoration is easily and economically applied by the use of Hy-tex mosaic of Enamel Brick of the same quality and durability.

With the range of color available through the use of Ivory, Transparent Buff, Cream, Grey, Jade, Green, the various Blues, Red-Brown and Black, in lane markings, distance marker bands, depth signs, and mosaic ornament, either in the curb above gutter or in the wall below, a complete scheme of color decoration may be introduced.

The room walls surrounding the indoor pool, as well as locker and shower rooms, barriers, etc., of the outdoor pool, may be of Enamel Brick in harmony with the pool, with unlimited possibilities in ornamentation through the use of Hy-tex mosaic.

# HY-TEX STANDARD SWIMMING POOL

The Swimming Pool Standards adopted by The American Association for Promoting Hygiene and Public Baths include the following recommendations:

(*a*) The interior surface of the pool should present a perfectly smooth surface, without cracks, crevices, sharp corners, or pockets to shelter dirt and disease germs.

(*b*) The pool should be surrounded by an overflow trough and the floor surrounding the pool be so drained that no water can flow from the floor into the pool. (The Association recently recommended a walk to drain into the scum gutter when water purification is used.)

(*c*) The pool and the surrounding floor should be free from obstructions.

Hy-tex Enamel Brick Pools strictly conform to these recommendations as will be seen by an examination of the construction details shown on the succeeding pages, and for the following reasons:

(*1*) The permanence and impermeability of the enamel.

(*2*) The sizes of the units, resulting in the maximum practicable elimination of joints.

(*3*) The elimination of sharp corners by using rounded shapes at all internal and external angles.

(*4*) White Enamel Brick lining in the pool will readily show any accumulation of scum and dirt and the immediate necessity for cleansing.

Color is supplied in the mosaic distance markers and lane lines. If, to secure richness of ornamentation, additional color is desired, it can always be secured by the use of Hy-tex pattern or mosaic in the few top courses of brick just under the scum gutter.

The Hydraulic-Press Brick Company furnish pool linings complete to the under side of the floor, including standard gutter and corbel blocks, special gutter and corbel blocks to fit drain and skimmer heads, and the non-corroding metal gutter drains, skimmer heads, ladder steps and handgrip boxes. These items are specially made for the Company and are exclusive to the Hy-tex Standard Pool. All other accessories, such as inlets, outlets, main drains, vacuum cleaner inlets, removable metal ladders (when used), spring boards, diving platforms, etc., are standard pool equipment obtainable from the manufacturers of these products.

## CONSTRUCTION NOTES

The swimming pool is composed of two distinct parts: (a) the concrete retaining tank; (b) the sanitary lining of the tank, which is the item of construction offered by the Company and shown in the following pages of detail.

## Concrete Retaining Tank

While the design of the concrete tank properly falls within the province of a concrete engineer, it may not be out of place to make a few recommendations based on our experience.

The concrete tank, accurately built with all reinforcements, must be water-tight when completed. It should be accurately laid out with all walls plumb and true, the floor properly sloped, and arrangements made to place the necessary waste and supply pipes of the plumbing system. Care must be taken that this tank is of sufficient size to allow for waterproofing, lining walls and grouting, and for the ladder recesses when used.

An increase of twenty inches in the finished dimensions for the length and width of the tank is usually ample — the ten inches on each wall affording a comfortable working space for waterproofing and building the backing and lining walls of the tank.

If Flatter brick are used for the pool bottom, five inches should be the minimum allowance between the tank bottom and the face of the finished lining. If brick are laid on edge on the bottom, the allowance should be seven inches. Care should be taken to make the bottom of the tank accurately to line and slope; for, while it is of minor expense to bed up irregularities, it is a very expensive procedure to cut down concrete to proper levels.

If possible, concrete should be poured continuously, but as this is usually impracticable, the day's work should stop on horizontal lines. Before again starting to pour, the concrete should be roughened, brushed clean, wet down and sprinkled with dry cement. The tank must be as nearly as possible a homogeneous mass without cracks or crevices and must be waterproofed so that it is absolutely water-tight. Experience has proved that the application of membrane waterproofing is unsatisfactory and that the only sure method of obtaining results is by plastering the inner wall with a thick water-resistant plastic coating.

Care should be taken to rough in accurately and thoroughly grout all plumbing pipes. If the pipes cannot be exactly located, it is best to insert in the forms a conical core which is afterwards removed, the pipe placed in position and the space around the pipe grouted tight and made waterproof.

The concrete tank walls (Diagram G) should finish at a point level with the top bed of corbel blocks (Diagram B), as shown on Plate III. When the corbel block and brick courses above same have been set, a reinforced concrete slab extending from the outside of the tank wall and filling the entire space back of the brickwork above the corbel blocks should be poured (Diagram F, Plate III). By this method the pool construction is securely anchored in place.

For outdoor pools of large dimension, suitable expansion and contraction joints should be placed in the walls and bottom of concrete tank.

## Building the Lining

As the appearance of the pool is dependent upon good workmanship, the following suggestions are offered to assist in securing results:

(*1*) For convenience in working, the datum or base line used for all vertical measurements should be the top of last brick course under the gutter blocks (Diagram X, Plate III). This base line, determined from the surface of the finished floor level, should be marked at frequent intervals around the tank wall and carefully checked to insure accuracy, care being taken that this point is a sufficient distance below the finished floor level to allow for the gutter block, corbel block and such brick courses as may be used above the corbel, and the thickness of the floor itself.

(*2*) To determine vertical measurements below datum line, the use of brick course-rods, accurately marked to show courses of brick-and-joint, is suggested.

(*3*) The faces of the pool walls below gutter should be accurately laid out, with proper spacing between these faces and the wall of the concrete container, and permanent piano wire lines set for these faces, all work being plumbed down from these lines.

(*4*) The top surface of the lip of gutter block must be absolutely level around the entire pool, as this point is the water line of the pool.

## Starting Brickwork

The number of regular courses and the soldier course under them at the shallow end fixes the levels of the brick courses throughout the pool. The first step in starting brickwork is to lay accurately to line, level, and slope the cove brick which forms the connection between floor and wall. Upon this course is set the soldier course, so spaced and fitted to the floor slopes that the tops of the brick are level and accurately work to line with the horizontal brick courses of the walls. These courses should always be laid out by the use of a Brick Course-Rod and down from the datum line.

The backing wall of hard common brick should be carried up at the same time as the Enamel facing wall and should be tied by the use of No. 10 copper wire loop anchors embedded in the joints. *Galvanized iron should never enter into pool construction at any point.*

The walls should be completed before starting pool bottom. The lane lines in the bottom should be accurately spaced and laid to the exact grades and levels, as these and the lower edge of the cove brick are the guide lines for the slope. The filling between lane lines should be so laid out that either a full brick or a joint is in the exact center between lane lines. This makes a uniform finish on each side of the lane lines and preserves necessary symmetry in appearance.

## Mortar

We recommend for laying, a mortar composed of half Lime Mortar and half Cement Mortar; and a cement grout to fill solidly all vertical pockets and joints.

If desired, the brickwork may be pointed after completion with a white mortar; or, during erection, by buttering not over one inch wide on the edges. This mortar

to be composed of white cement, one part, and white sand or marble grit, three parts, with the addition of a little lime putty.

### Sizes and Depths

Pools to be used for athletic events and official records must rigidly adhere to the dimensions set forth by the athletic associations in rules governing such events. For example, sixty feet is the minimum length, twenty feet is the minimum width, inside the pool proper. To keep them in accordance with association rules, increases in length must be in multiples of fifteen feet, widths in multiples of five feet.

Standard depths of water are, not less than three feet six inches at the shallow end; not less than four feet at a point twenty feet from the shallow end; not less than six feet six inches at the deep end; and not less than eight feet six inches at the deepest point of the pool — which should occur about fifteen feet from the wall at deep end. The foregoing dimensions agree with Y. M. C. A. standards.

The walk around pool should have a minimum width of four feet along both sides and the shallow end, and a minimum width of ten feet along deep end, and it is imperative that this runway and all pool curbs be covered with a non-slip surface.

The profile of bottom most commonly used is the so-called "spoon bottom," as shown on Plate II, Diagram C.

### Special Pools

Pools primarily intended for use by children, and private pools, may be of any desired size, shape, and depth of water.

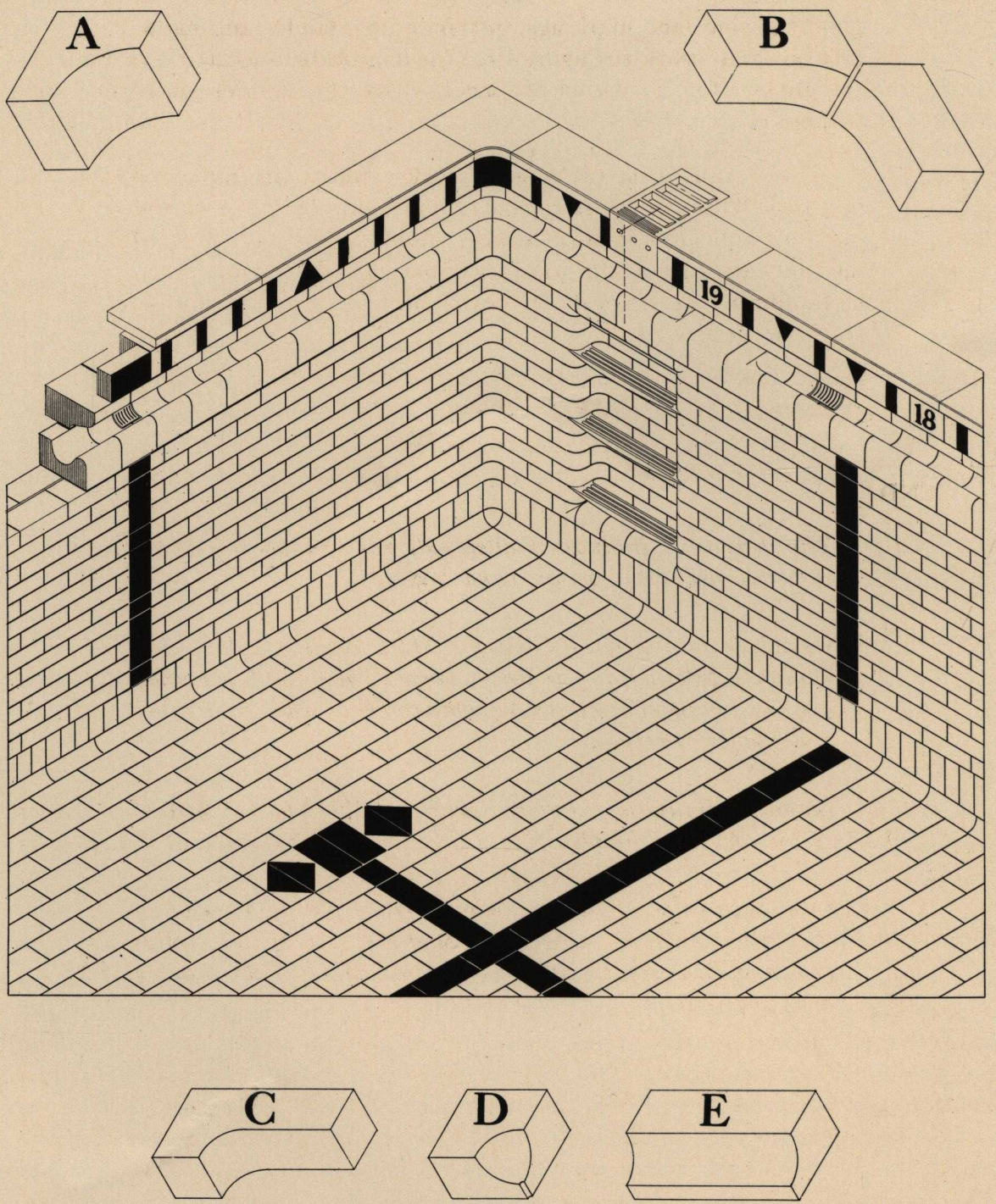
### Ladders

If inset and built as a component part of the pool, ladders should be as shown on Plates VII and VIII, and should always occur in the side walls of the pool, as placing them on end walls is very dangerous to users of the pool.

### Lines and Markings

The present tendency in swimming pool construction is to reduce pool markings to the simplest form. The essential markings are the lane lines; the turning lines, five feet from the ends of the pool; the stop blocks at the ends of the lane lines, two feet six inches away from the end walls; and the distance markers which the Company furnishes in the form of a mosaic band. Depth signs, made to conform to specifications, are also obtainable from the Company. These are inserted in the mosaic band of the curb where they are always in sight to give proper warning. This information should also be placed on the floor at the edge of the pool.

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate I




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# PLATE I

Illustrates in isometric the corner of the shallow end of pool, showing lane markings, gutter drains, ladder and hand-grip box and, below the figure 19 in the mosaic distance marker, the gutter stop-blocks which occur where the skimmer head is used.

The distances on the mosaic marker course are indicated in yards. These markers repeat on each side of the pool and may be indicated in any lengths desired. The two favored methods are to mark in yards, numbering every yard; or, in feet, numbering every fifth foot. Numbering should always start at the deep end.

LEGEND

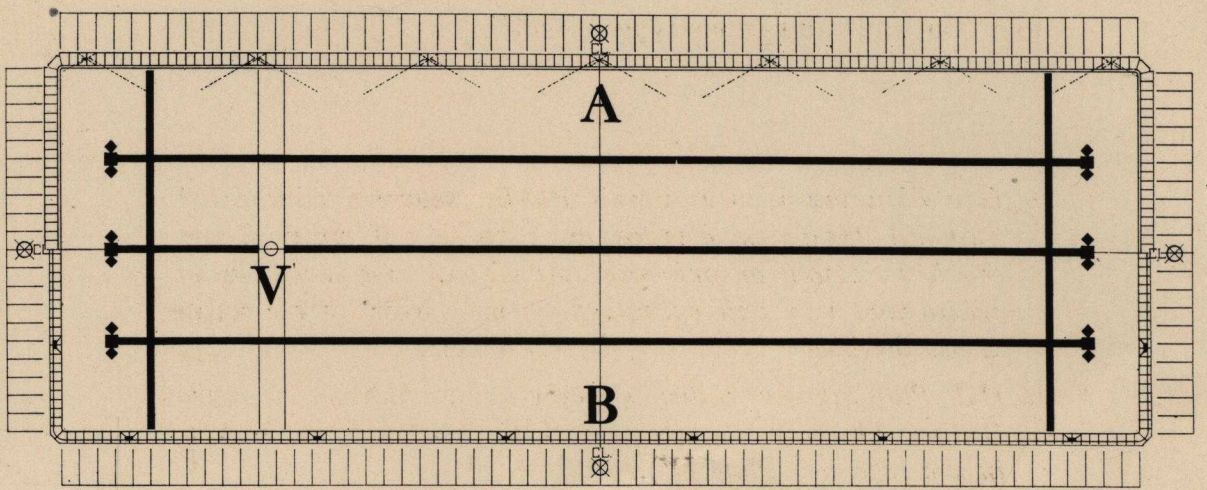
A *The three-inch Bullnose Flatter Internal (Shape No. 1240) in the corner of the mosaic band course.*

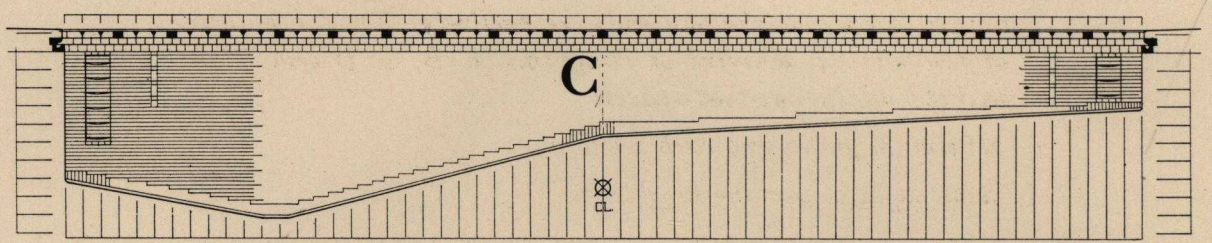
B *Combination of brick (Shape No. 1140) making a three-inch Bullnose Internal in Stretcher course. These are used when a single course of brick is laid above corbel or when a Stretcher and Flatter combination is used.*

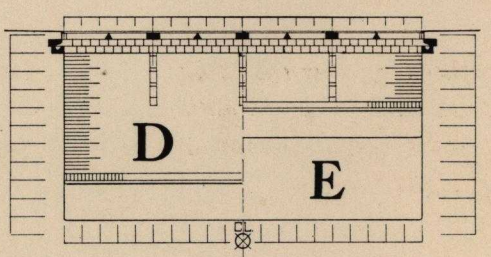
C *Standard Bullnose Internal Return (Shape No. 1510) used in the corner of the pool.*

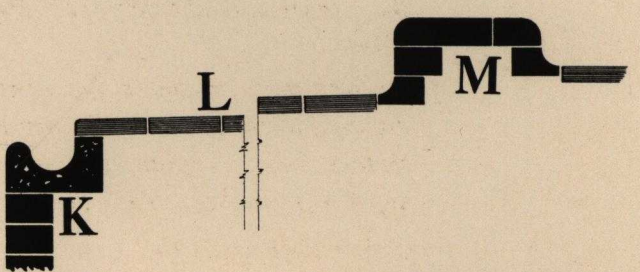
D *Cove Base Internal Round Return (Shape No. 1805) used in connection with the Cove Base Stretcher (Shape No. 1800) shown at E, this brick being used to form the junction between floor and walls.*

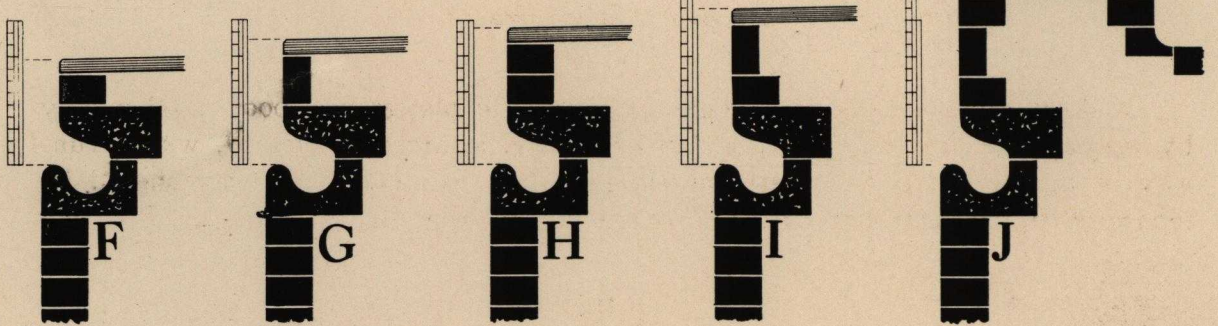
# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate II




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# PLATE II

Shows in Plan and in Section a standard twenty- by sixty-foot pool and the various types of curb.

LEGEND

A *Half-Plan taken above Corbel Blocks, showing locations of Skimmer Heads as detailed on Plate V. Skimmer Heads should be placed on only one side of pool and should be so spaced that they will entirely flush the surface of the water across the pool.*

B *Half-Plan taken at Gutter, showing normal location of Gutter Drains. These drains take care of the overflow from the pool in use (See also Plate IV).*

C *Longitudinal section of pool.*

D–E *Half Cross Sections, taken at deepest point of pool, looking toward deep and shallow ends, respectively. For convenience of comparison, margins of Diagrams A, B, C, D and E are marked off in one-foot spaces.*

F *Minimum gutter and curb sections.*

G–J *Show curbs of varying heights.*

F–I *Show runways draining into pool gutter as recommended by the American Society for Promoting Hygiene and Public Baths.*

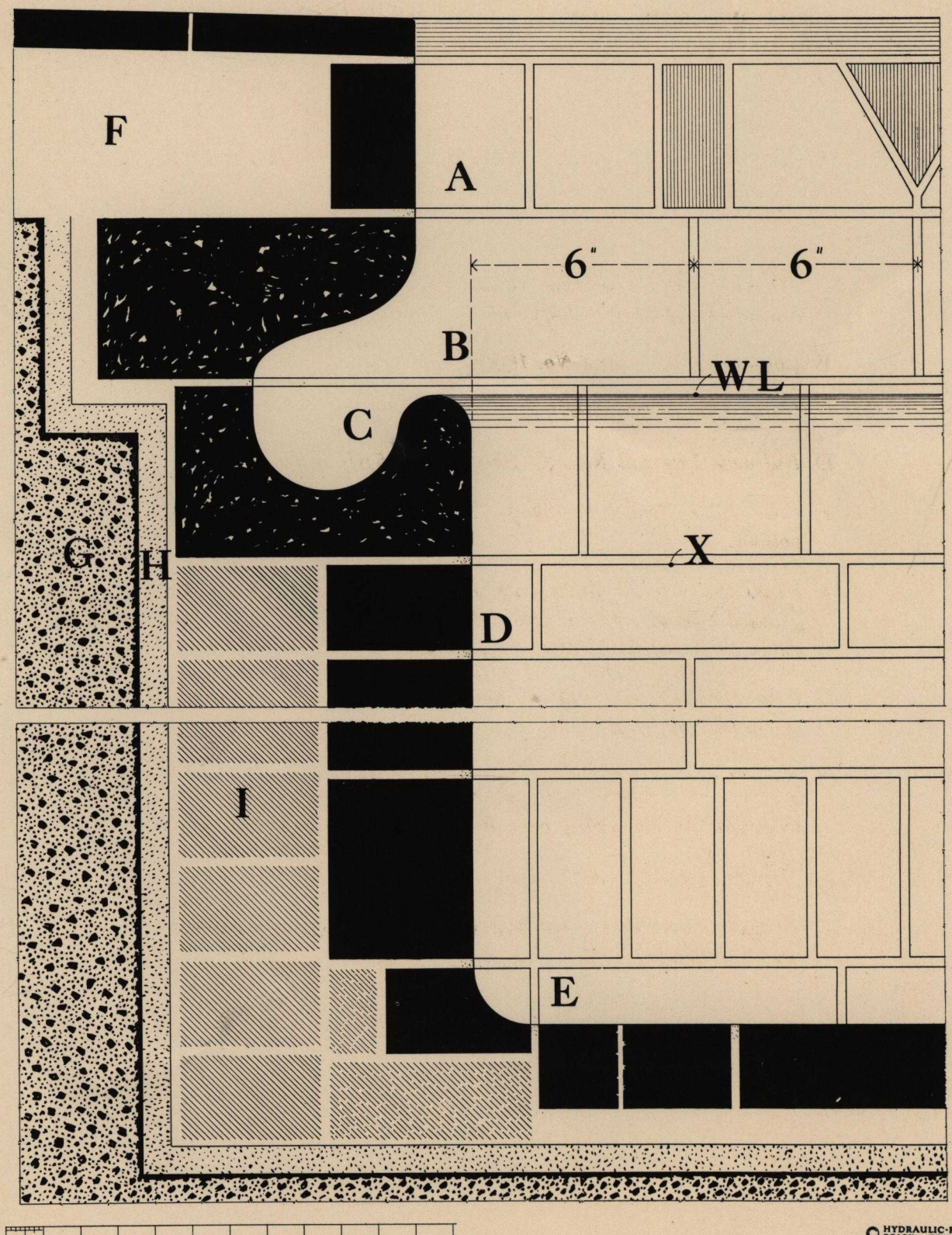
J *Curbed pool in which the runway is separately drained. The top surface of curb should never be less than twelve—preferably sixteen—inches wide, and should be of ample height to show a definite step, five inches being the usual height.*

K *Gutter without curb.*

V *Indicates flat space at low point of pool, which is a convenience for attendants cleaning the pool and affords a better opportunity for insertion of main drains.*

Of these sections G is most generally used. For playground pools used mostly by women and children, gutter sections F and K are to be preferred, with a runway of ample width for safety, as shown at L. Swimmers' runway should be separated from spectators' area by a curb, as shown at M.

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate III




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# PLATE III

Shows a section through mosaic distance marker course, corbel and gutter, and the connection between walls and bottom of pool. The drawing is reduced to scale: three inches equal one foot.

LEGEND

A *Mosaic distance marker course. Shown as a Flatter brick course (Diagram G, Plate II).*

B *Corbel course (Shape No. 1630).*

C *Gutter (Shape No. 1620).*

D *Bullnose Internal Return (Shape No. 1510) in corner.*

E *Cove Base Stretcher (Shape No. 1800) between wall and bottom.*

F *This space to be filled with reinforced concrete thoroughly grouted behind corbel course (B), as mentioned in treating of Concrete Retaining Tank, on page 5.*

G *Concrete tank wall, which should stop level with top surface of corbel course (B).*

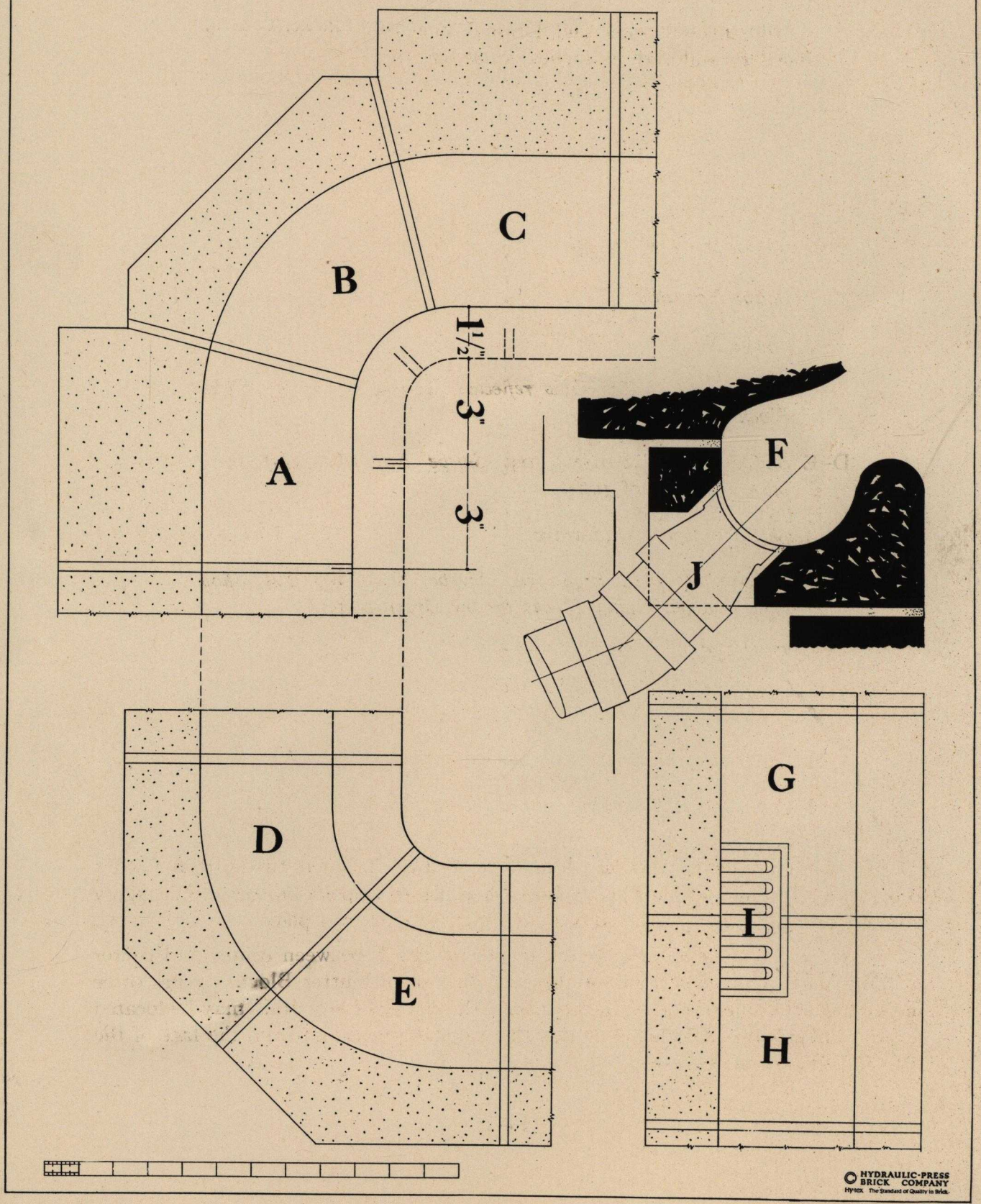
H *Waterproof plaster coat on face of concrete.*

I *Common brick backing behind the enamel brick facing.*

WL *Top of Life Rail (water line).*

X *Datum or base line, from which all measurements in erection are to be made.*

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate IV



# PLATE IV

Illustrates Corner and Drain Blocks. The drawing is reduced to scale: three inches equal one foot.

LEGEND

A *Shape No. 1631–Right.*

B *Shape No. 1632.*

C *Shape No. 1631–Left.*

*These three shapes show reflected plan of corner of Corbel Blocks.*

D–E *Shape No. 1621–Right and Shape No. 1621–Left show plan of corner of gutter.*

F–J *Section at gutter and drain.*

G–H *Shape No. 1623–Right and Shape No. 1623–Left show right and left Gutter Blocks for the Drain plate I.*

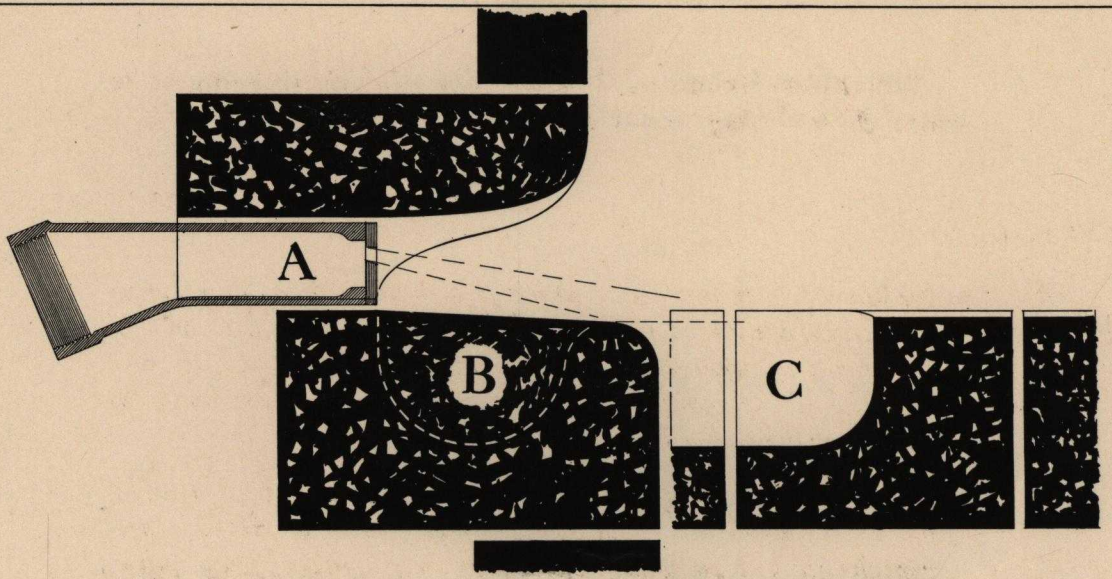
I *Drain Plate.*

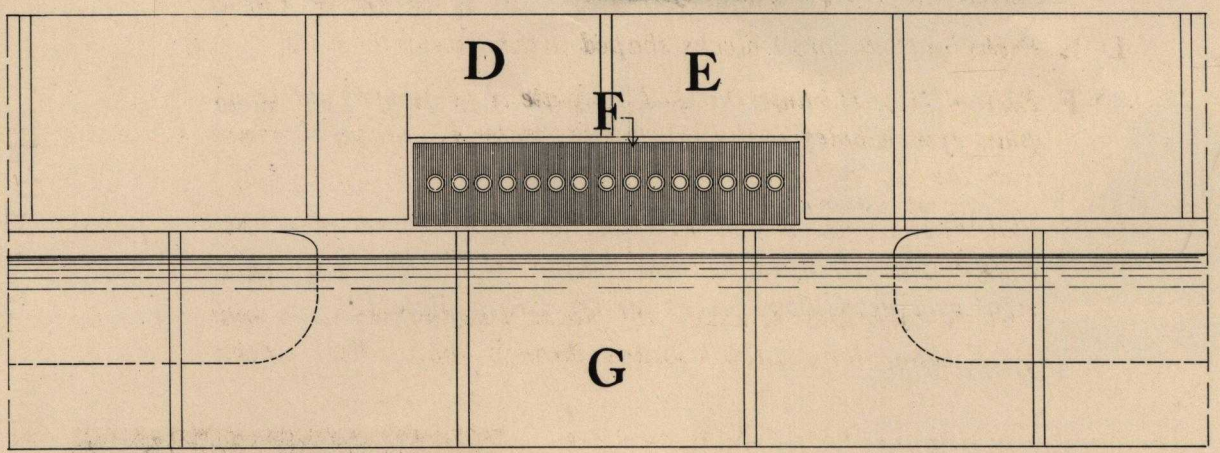
To Locate Drains:

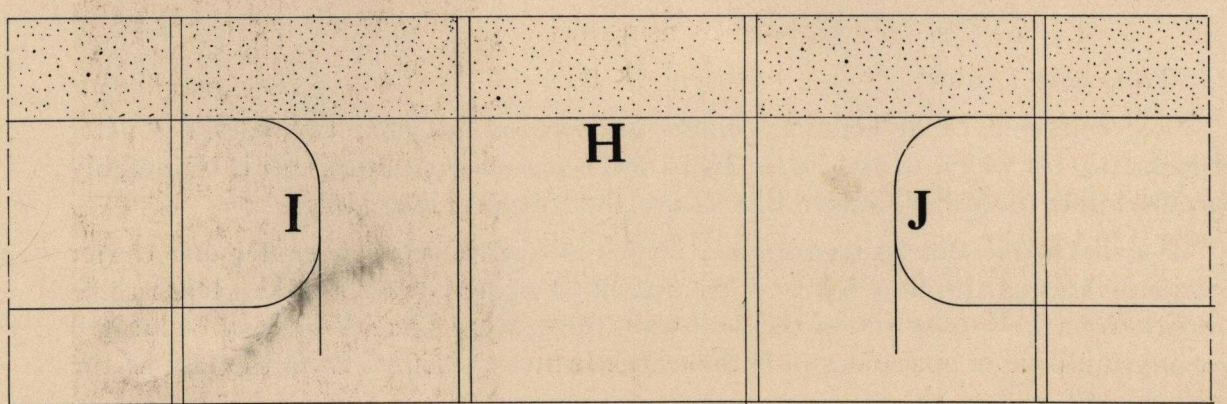
For convenience in erection, drains are located between two special Gutter Blocks (G–H) which fit the Drain Head when placed in position. All is thoroughly grouted and the other Gutter Blocks are then slipped into place.

As all Gutter Blocks measure six inches in length between center and center of joint, and as the first joint of the straight run of Gutter Blocks occurs three inches from the side or end of the pool wall, the center of any drain may be located at any multiple of six inches plus this three inches, measured from the face of the side or end wall of the pool.

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate V




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# PLATE V

Illustrates Skimmer Blocks. The drawing is reduced to scale: three inches equal one foot.

LEGEND

A *Section of skimmer head, which is a flat box of non-corroding metal, triangular in plan, tapped for supply pipe and may be obtained for either 22½° or 45° connection. This head is provided with a removable face plate which is set flush with the bottom of the corbel blocks.*

B *Gutter. This is stopped at each side of the flat-topped skimmer block (H) which is placed directly under skimmer plate to prevent the spray from being deflected by the life rail of scum gutter.*

D–E *Right and left corbel blocks shaped to take skimmer head.*

F *Face plate of skimmer head. This plate is perforated with one-quarter inch holes so drilled that the water is sprayed fanwise from the face of the plate.*

G–H *Flat-topped block under skimmer, in elevation and plan. See marginal cut.*

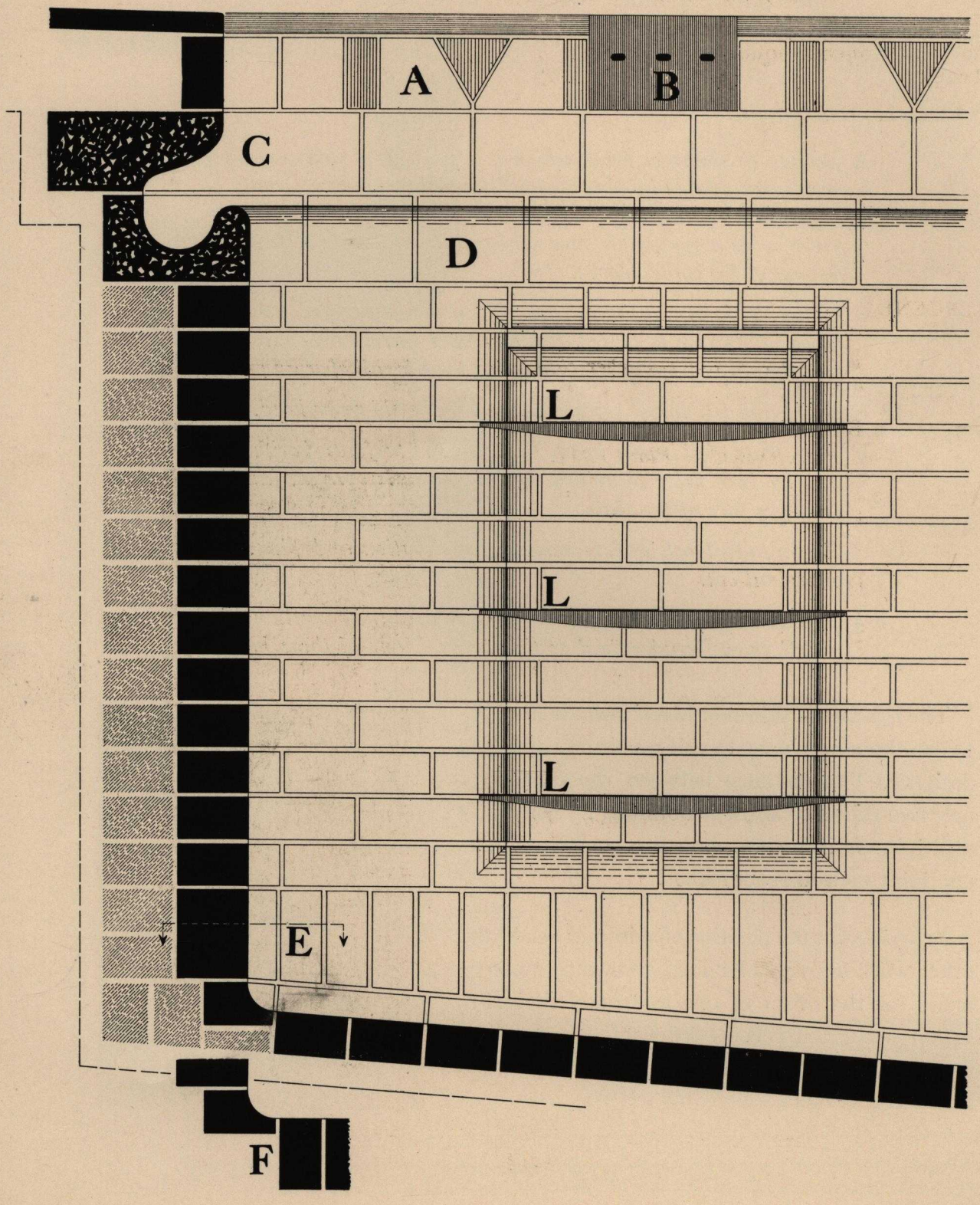
I–J *Left and right ends of gutter stop blocks used in connection with H; C shows longitudinal section through one of these blocks.*

The number of skimmer heads and distance between them may vary to suit requirements of the designer. The distance between the centers of any two skimmer heads is obtained by using any multiple of six inches, as one corbel block plus one joint measures six inches.




In laying out the position of skimmer heads and other work above water line, allowance must be made for the offset of one and one-half inches which is the difference between the face of the pool below water line and the face of the curb above corbel block.

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate VI




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# PLATE VI

Illustrates Ladder and Ladder Recess at shallow end of pool. The drawing is reduced to scale: one and one-half inches equal one foot.

LEGEND

A *Mosaic distance-marker course.*

B *Elevation of handgrip box, more fully shown on Plate VIII.*

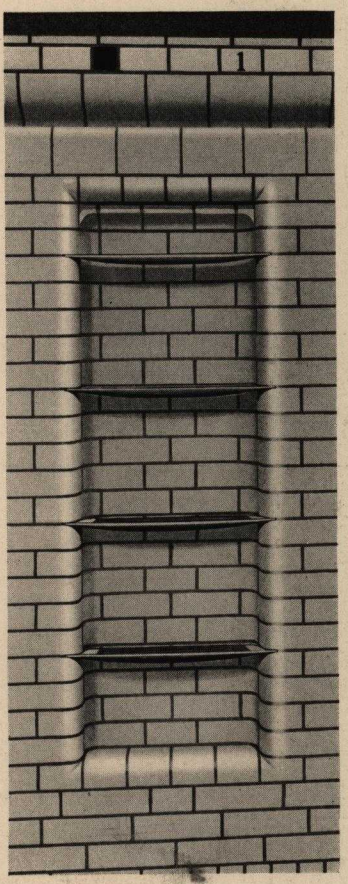
C *Corbel course over gutter.*

D *Gutter Blocks.*

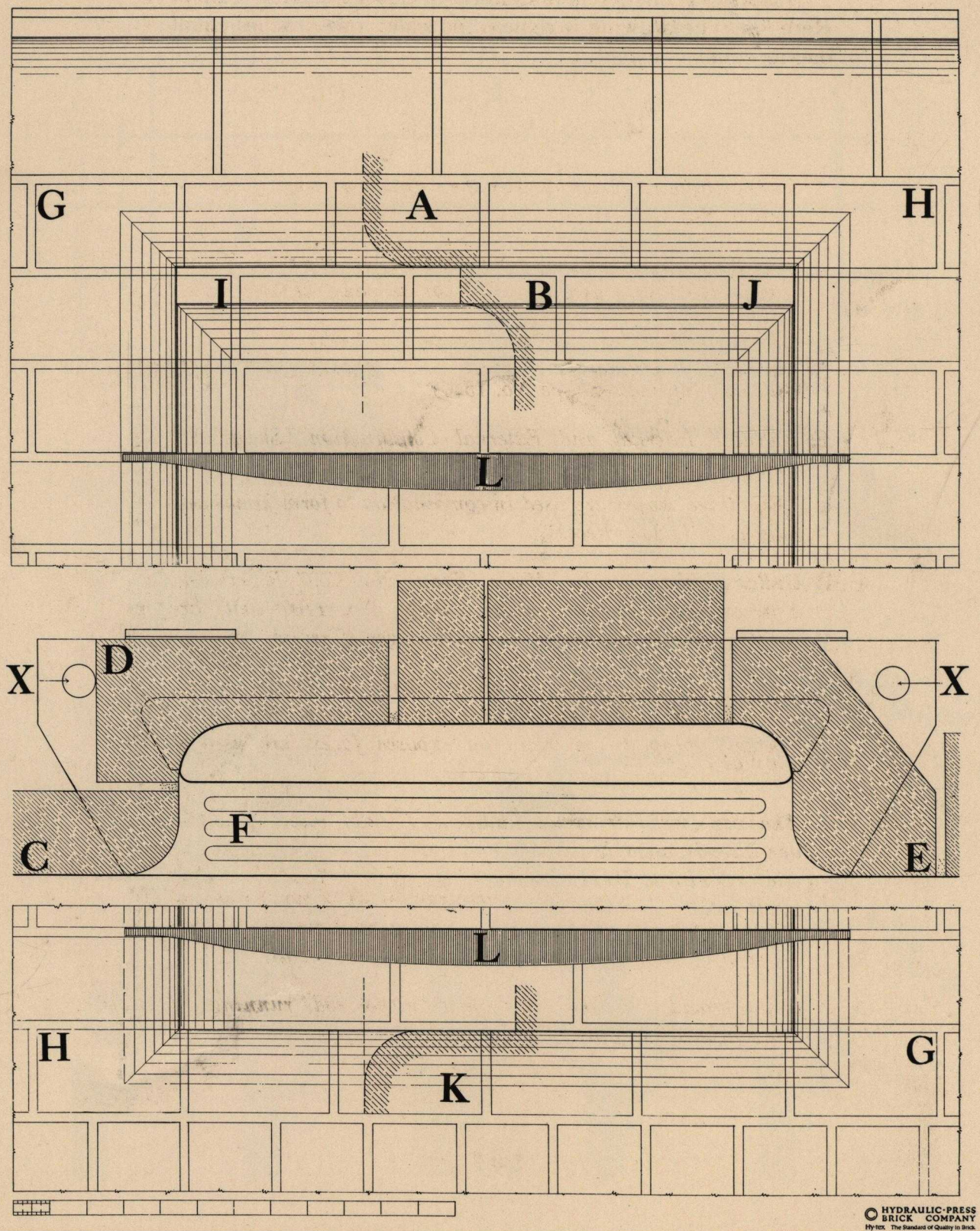
E *Section line through lower corner where the soldier course occurs over cove course.*

F *Plan at E.*

L–L *The non-corroding metal Ladder Treads, also illustrated on Plates VII and VIII. See marginal cut.*



# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate VII



# PLATE VII

Shows various brick details in connection with Ladder Recesses. The drawing is reduced to scale: three inches equal one foot.

LEGEND

A *Bullnose Flatter External (Shape No. 1203) used as top of Ladder Recess.*

B *Cove Base Stretcher (Shape No. 1800) and Cove Base Header (Shape No. 1801) used as corbel course under head of recess.*

C *"Soap" of Bullnose External (Shape No. 1500).*

D *Bullnose Internal (Shape No. 1510).*

E *Bullnose Internal and External Combination (Shape No. 1530).*

*These three shapes are used in combination to form jambs and returns of Ladder Recess.*

G–H *Bullnose Flat Stretcher Miter (Shape No. 1707–Right) and Bullnose Flat Stretcher Miter (Shape No. 1707–Left) are used to form the corners of the outer edges of recess.*

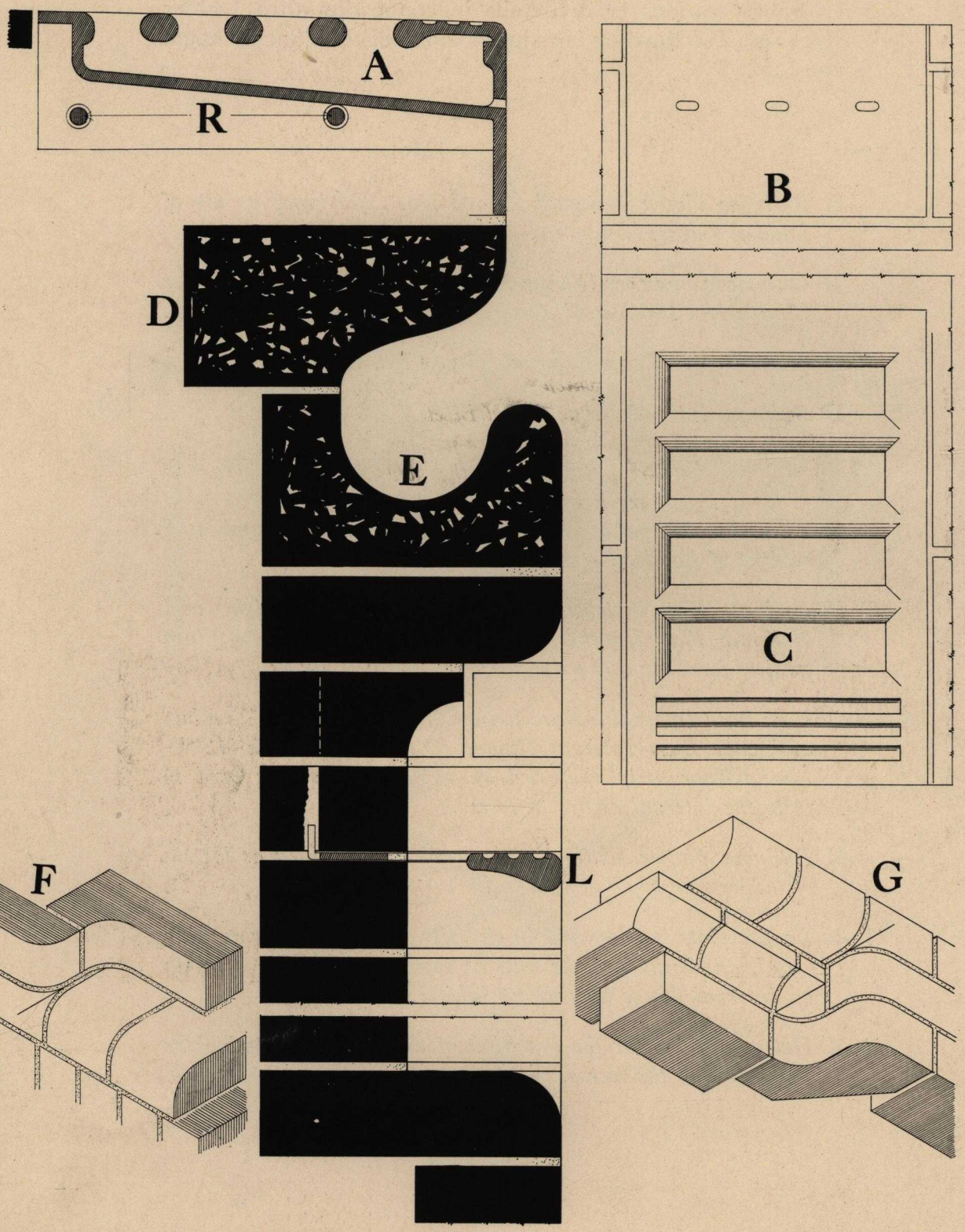
I–J *Cove Base Internal Square Return (Shape No. 1804–Special) and Cove Base Internal Square Return (Shape No. 1804–Special), properly enameled on exposed faces, are used to form the internal angles of recess.*

K *Bullnose Flatter External (Shape No. 1203) used as bottom of ladder recess.*

F–L *Ladder plate in plan and in elevation, made of non-corroding metal, and built into the wall as shown by dotted lines, with an internal flange turning up behind brickwork.*

X–X *Holes provided for the insertion of anchor rods running the full height of the recess.*

# Hy-tex ENAMEL BRICK SWIMMING POOL—Plate VIII




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# PLATE VIII

Section through Side Walls at Ladder Recess.

LEGEND

A *Section through Handgrip Box.*

B *Elevation of face of box.*

C *Plan of top surface, which is set flush with the floor. This box, which builds in above the Corbel Block and equals in thickness the floor and the mosaic distance-marker course, provides an ample and secure handgrip for the swimmer coming out of the pool. See marginal cut.*

D *Corbel Block.*

E *Gutter Block.*

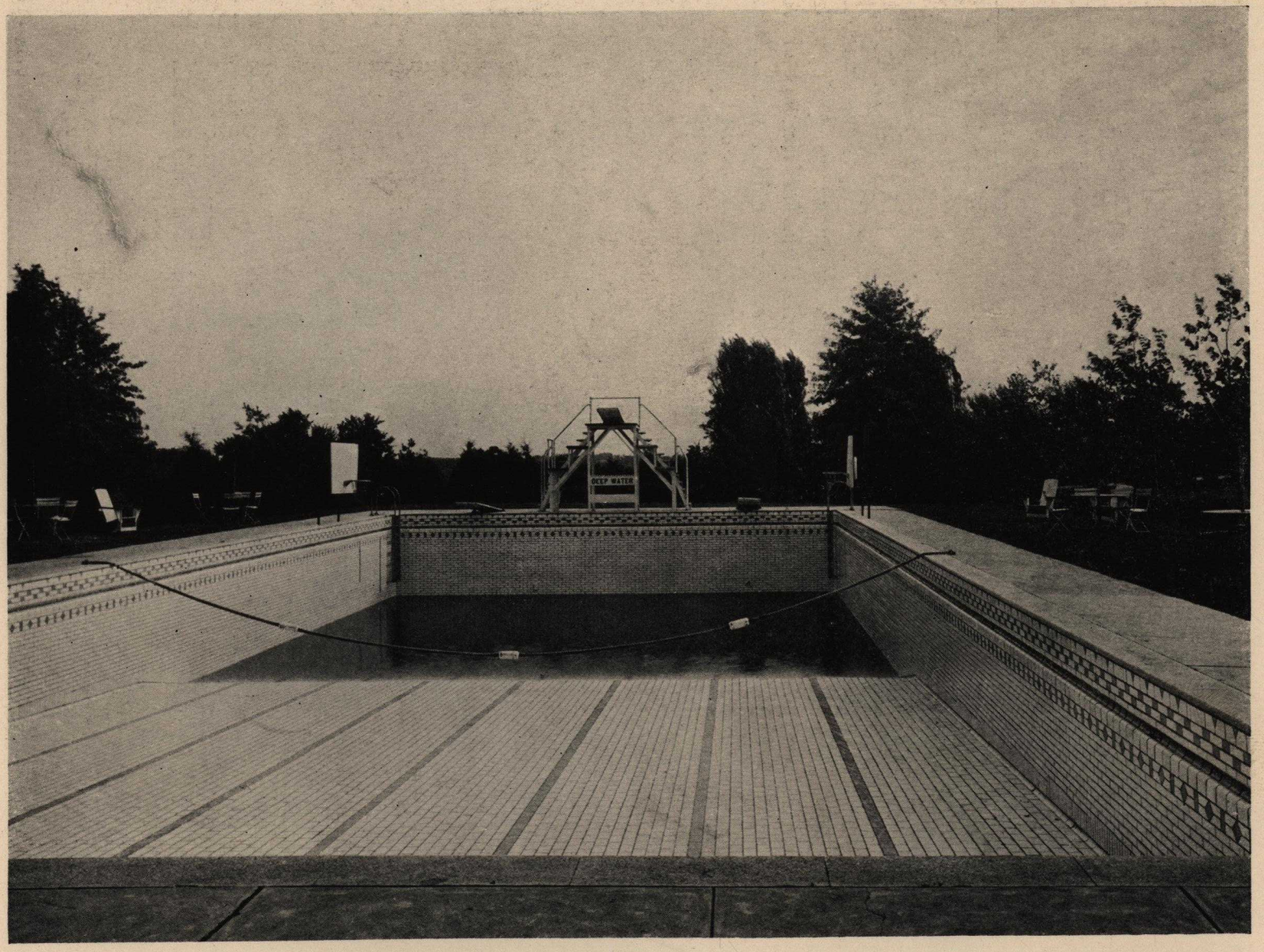
F *Isometric, showing corner of the bottom of Ladder Recess.*

G *Isometric, showing top of Ladder Recess.*

L *Section through center of ladder step.*

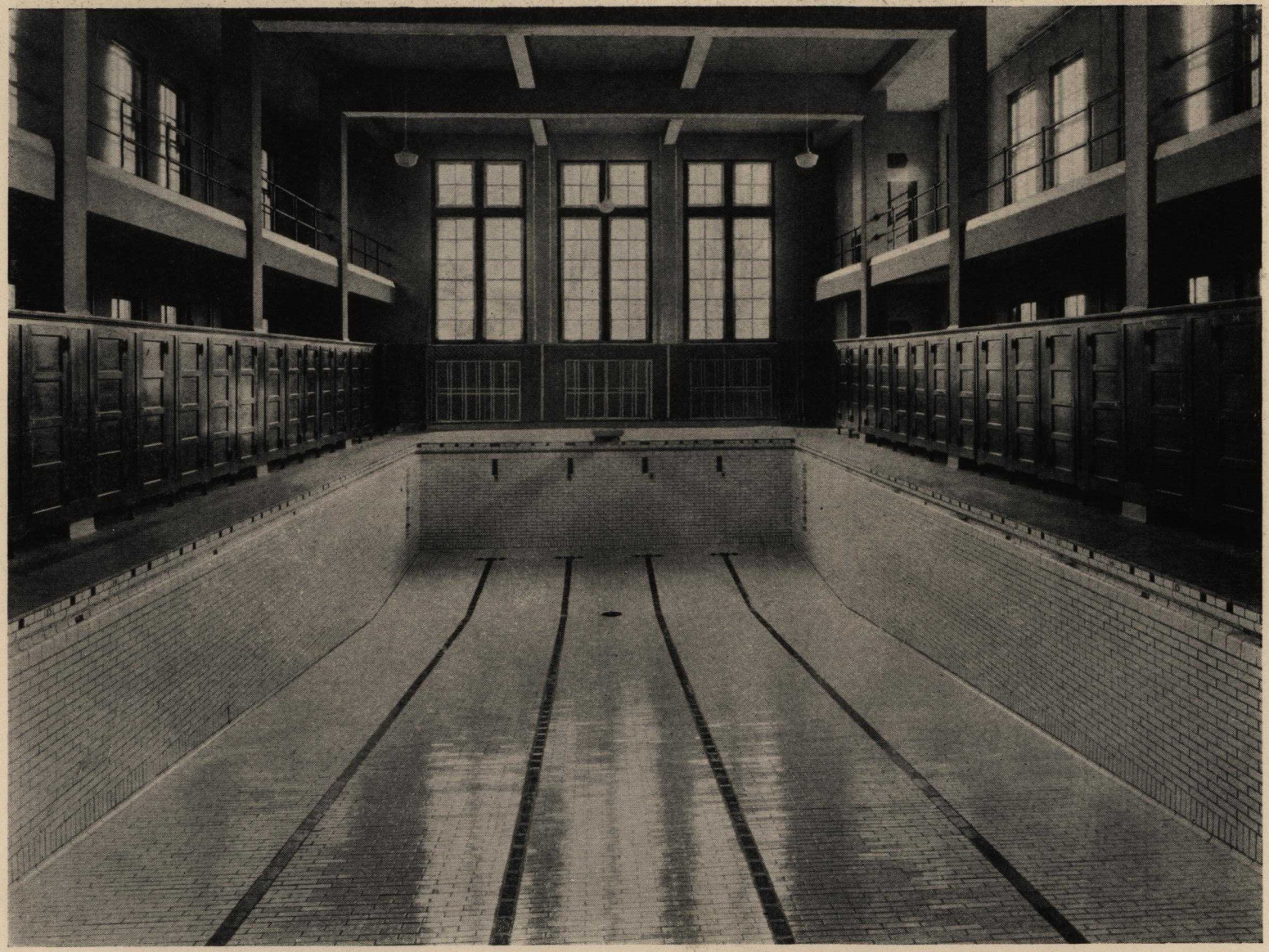
R *One-half inch anchor rods running through flanges of Handgrip Box.*






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St. Louis County, Missouri

LA BEAUME AND KLEIN
*Architects*



NOTRE DAME of MARYLAND
Baltimore, Maryland

CAPTAIN FRANK J. BALDWIN
*Architect*

# WATER PURIFICATION AND ALLIED SUBJECTS

The necessity for renewing or purifying the water of swimming pools is now universally conceded.

Mr. Arthur Morton Crane, Mechanical Engineer, Member of The American Association for Promoting Hygiene and Public Baths, and Editor of the Journal published by that Association, is authority for the statement that individual opinions pertaining to the sanitary construction and maintenance of swimming pools are being rapidly superseded by laws and ordinances of states and municipalities. For general and detailed information as to state and municipal Health Department regulation of swimming pools, bathing places and comfort stations, suggestions for water purification, and allied subjects, the reader is referred to the Annual Journals of the Association, which may be obtained by addressing Mr. Crane at 327 West 25th Place, Chicago.

For those who desire to install a refiltration system we quote the following Standard Specification recommended by The American Association for Promoting Hygiene and Public Baths:

**General:** Furnish and install where shown on plans a refiltration system for the swimming pool, consisting of at least two pressure filters manufactured in accordance with the Standard Specifications of the Associated Manufacturers of Water Purifying Equipment, with two (2) circulating pumps, and connect same, all as hereinafter specified.

**Filter Tank:** The tank of each filter is to be —— inside diameter, constructed of steel, tested under a hydrostatic pressure of —— pounds to the square inch and guaranteed to be capable of withstanding a working pressure of —— pounds per square inch.

**Filter Piping:** The outside piping of each filter is to be tested under a hydrostatic pressure of —— pounds to the square inch and guaranteed to be capable of withstanding a working pressure of —— pounds per square inch.

**Pressure Gauge:** Attached to both inlet and outlet of each filter and furnished by the filter manufacturer, there is to be a gauge to indicate the pressure — the reading of which will by comparison show the loss-of-head or back-pressure caused by the filter and thus indicate when the filter requires washing.

**Sight Glass:** To the waste discharge of the filters there is to be connected a sight glass, so arranged as to afford the operator of the filter a view of the water passing to the sewer when the filter is being washed, and also of the filtered water when same is passed to the sewer. The glass is to be held securely in place, but so arranged that it may be readily removed for cleaning without interfering with the operation of the filter when in service.

**Strainer System:** The strainer system of each filter is to consist of header and lateral pipes with bronze or brass filter strainers. The strainer system is to be installed by the filter manufacturer before shipment. After erection, the contractor is to embed the strainer system in concrete so as to leave only the top sections of the strainers exposed.

**Filtering Material:** The bed of filtering material is to consist of suitable grades of screened silica filter sand and filter gravel having an aggregate depth of at least 36 inches.

**Coagulating Devices:** Connected to the inlet of the filters, as an integral part of same, there is to be a coagulating device for the automatic proportional feeding of alum to the water entering the filters. The alum tank is to be of cast iron, with a regulating valve equipped with pointer and dial to regulate the feeding of alum.

**Feeder:** Attached to the outlet of the filters and as a part thereof, there is to be a device for the feeding of a solution of hypochlorite-of-lime to the filtered water as it leaves the filter. (Not required if some other method of disinfection is to be used.)

**Capacity:** Each filter must be guaranteed to have a capacity of —— gallons per minute, when filtering at the rate of 3 gallons per minute per square foot of surface area of filter bed; and that at this rate the filtered water on leaving the filter will be bright and clear and practically free from color, turbidity, and suspended matter.

**Circulating Pumps:** Each of the two (2) circulating pumps is to be of the centrifugal type, capable of passing the hair and lint usually found in a swimming pool, direct connected to and mounted upon the same cast-iron bed-plate with a suitable electric motor capable of running continuously without overheating; each pump and motor to be capable of pumping water from the drain line of the pool through either or both filters and back into the pool again at the

shallow end thereof and at a point above the water line at a rate equal to the capacity of the filter plant, allowing for a possible resistance or back pressure caused by the filter when dirty equal to five pounds pressure or twelve feet head. (Normally only one pump will be used for refiltering the pool water; but both may be used for washing the filters with water from the pool, filtering through either filter to wash the other with filtered water and also for emptying pool to sewer.) Connected into the suction line of the circulating pumps, a suitable strainer is to be installed.

**Connection:** The filtration plant is to be connected so that when filling the pool with hot water, the water will enter the pool through the side at the bottom of the deepest part thereof; and also, by means of the circulating pumps hereinbefore described, to refilter the water from the drain line of the pool and deliver the refiltered water into the shallow end of the pool at a point above the water line, all as hereinbefore specified. The waste discharge of the filtration plant is to be connected to the sewer.

**Pool Cleaner:** The contractor is to furnish, and install in accordance with directions furnished by the manufacturer, a swimming pool cleaner consisting of a suitable vacuum cleaner nozzle, with hose supplied with the tool. This is to be connected by a 2-inch wrought-iron pipe (with such valves as are necessary) from one side of the pool at a point midway between the ends and below the overflow trough to the suction line of the circulating pumps, with a connection from discharge line of pumps to sewer to by-pass the filters so that the foreign matter removed by this cleaner may be pumped directly from the pool to the sewer.

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